WEATHER BUREAU MEN AS EDUCATORS.

The following text summarizes the educational work done by local Weather Bureau men during the year 1908, so far as it has come to the notice of the Editor:

Prof. A. G. McAdie reports an introductory lecture on January 16, by himself, and a four months' course of two lectures weekly as an elective in the State School of Agriculture, and an obligatory course for candidates for the Teacher's Certificate in Physical Geography, at the University of California, Berkley, Cal., by Dr. C. Abbe, jr., Observer.

D. Cuthbertson, Local Forecaster, Buffalo, N. Y., reports visits by classes from local schools on February 1; March 9, 10, and 11; April 8, 9, and 25. On February 13, he gave an extended talk on "The value of the Weather Bureau to navigation" in the club rooms of the Shipmasters' Association of the Great Lakes. His first lecture before this association was given in 1892.

J. R. Weeks, Local Forecaster, Binghamton, N. Y., reports that the popular lecture with lantern slides, prepared by him in 1907, has been used for one or two weeks each at twenty-four places in New York and one each in Nebraska and Indiana. The lantern slides were also used by W. M. Wilson, Section Director, for short talks at the State Fair, at Syracuse, in connection with the exhibit of the New York State College of Agriculture.

E. L. Wells, Section Director, Boise, Idaho, reports visits by classes from local schools on August 4, October 16, and November 25. He also gave lectures illustrated by lantern slides loaned from the Central Office, on January 3, 20, and 23, November 25, December 7, 16, and 22.

M. L. Fuller, Observer, and Professor of Meteorology in the St. Lawrence University, delivered lectures before the Clarkson School of Technology at Potsdam, N. Y., during March, April, and May, in continuation of a similar series the previous year. Both these and his regular lectures at Canton, N. Y., with the accompanying examinations, count toward the Baccalaureate degrees of the University of the State of New York, whose central office is at Albany. An approximate record of his work for the year is as follows: During the first half year in the College of Letters and Science, three hours weekly in "Elementary Meteorology" to 11 students. During the second half year three hours weekly on "General Climatology" to 19 students; three hours weekly on "Advanced Meteorology" to 11 students. In the School of Agriculture, ten hours on the general work of the Weather Bureau and on "Climatology;" at the Clarkson School six lectures on "Economic Hydrology;" before agricultural societies, 3 lectures. Similar work was done during the autumn of 1908. An address was given December 30, 1908, before the South Bristol Farmers' Club at New Bedford, Mass.

E. W. McGann, Assistant Observer, Charles City, Iowa, reports visit by classes from the local high school on January 17.

Prof. H. J. Cox, Chicago, Ill., reports visits from classes and students in the local schools on March 4, 5, 10, 11, 12, 26, 27, and 30; April 1, 3, 6, 7, 8, 9, 10, 11, 13, 20, 21, and 24; May 5, 6, 7, and 22; June 1, 2, 3, 4, 5, and 18; in all, since September 1907, 40 classes averaging 25 students each. There is scarcely a week day at this station on which visitors do not ask to be shown thru the office and the time given to this work is very considerable. On March 11, Professor Cox gave an address before the teachers of physiography and astronomy in the Chicago high schools, on "The frost and temperature conditions in the cranberry marshes of Wisconsin."

S. S. Bassler, Local Forecaster, Cincinnati, Ohio, reports giving an address on the Weather Bureau May 11, 1908, at the twelfth annual banquet of the Manufacturers' Club of Cincinnati.

J. W. Bauer, Section Director, Columbia, S. C., reports giving three class-room lectures on meteorology, weather forecasting, and climatology, respectively, on January 20, 22, and 24, to the class in physiography at the University of South Carolina.

J. Warren Smith, Section Director, Columbus, Ohio, reports giving a lecture on January 23, on "The protection of crops from frost;" and again, January 24, on "Protection from lightning," before the students in the Short Course on Agriculture at the Ohio State University. Copies of these lectures have been published and widely circulated by the Associated Farm Press of Chicago and New York. Mr. Smith's regular course in meteorology consists of lectures twice a week during twelve weeks, optional in the College of Arts, but obligatory for juniors in the College of Agriculture, Ohio State University. Classes from local schools visited the office on January 14 and 16. On November 27 Mr. Smith read two papers, "Evaporation" and "Rainfall and crops," before the Ohio Academy of Sciences at Granville.

J. W. Byrom, Observer, Concordia, Kans., reports that classes from local schools visited the office on March 30, April 7, and October 20.

Joseph L. Cline, Observer, Corpus Christi, Tex., reports that during the academic year ending May 28, 1908, he delivered a series of 38 lectures on meteorological and climatological subjects to the senior class of the Corpus Christi High School. Also one lecture, June 17, to the students of the Corpus Christi Summer School. The series of lectures before the high school was resumed in October, 1908, having already been delivered for three consecutive years. This school affiliates with the State University at Austin, Tex.

J. M. Sherrier, Local Forecaster, Davenport, Iowa, reports that he delivered an address on February 26 before the Davenport Academy of Sciences on "Winter storms and cold waves." On January 17 he gave a lecture before the Men's Club, Rock Island, Ill., on "The practical work of the Weather Bureau."

W. U. Simmons, Assistant Observer, Del Rio, Tex., reports he delivered a lecture, February 21, before the Southwest Texas Sheep and Goat Growers' Association on "The distribution of Weather Bureau forecasts." The immediate result of this lecture was an extensive increase in the establishment of telephones within 100 miles of the station.

F. H. Brandenburg, District Forecaster, Denver, Colo., reports a lecture, illustrated by lantern slides loaned by Colorado College, on "Weather forecasting," on February 29, before the Colorado Polytechnic Society of Colorado Springs, assembled at Gleneyrie, the home of Gen. W. J. Palmer.

Norman B. Conger, Inspector, Detroit, Mich., reports that classes from the local schools visited the office, December 4 and 11; and that he gave an informal talk on November 24, before the Credit Men's Association.

James H. Spencer, Local Forecaster, Dubuque, Iowa, reports that on January 23, he delivered an address on "Weather signs and sayings" before the members of St. Luke's Fraternity. On May 16, an address before the Dubuque Teachers' Association. On May 22, a lecture on "Storms" before the alumni and teachers of St. Joseph's Academy. On April 23 the Dubuque Boys' Club visited the local office.

H. W. Richardson, Local Forecaster, Duluth, Minn., reports that on January 31 he delivered an address at the Lester Park Methodist church; also on December 8 on the Weather Bureau before the Duluth-Superior branch of the National Association of the Jobbers' Credit Men. He also reports visits from local schools, usually followed by an address of an hour's length, on May 22, October 13, October 22, and December 4.

A. L. Brand, Local Forecaster, Evansville, Ind., reports that on January 14 he delivered a lecture on the Weather Bureau before the Men's Club; also on November 13 a lecture before the Evansville Business Association.

C. F. von Herrmann, Section Director, Erie, Pa., reports that on March 15 a class from Harbor Creek High School visited the office.

W. W. Neifert, Local Forecaster, Hartford, Conn., reports that on January 22 he gave an address at the Walnut Lodge Hospital; on February 28, an informal talk at St. John's Episcopal church; on April 28, an address before the Weathersfield Grange; May 25, an address before the Men's Club. On February 4 and 5 the office was visited by local classes; on May 9 by members of the local teachers' convention.

W. B. Stockman, Section Director, Honolulu, H. I., reports visits from classes of Oahu College on May 20 and 28.

Dr. W. M. Wilson, Section Director, Ithaca, N. Y., reports that a series of lectures, laboratory exercises, and field observations designed to meet the needs of teachers of physical geography, amounting to four hours weekly, were given by him during the session of the Cornell Summer School, Ithaca, N. Y.

W. J. A. Schoppe, Assistant Observer, Iola, Kans., reports visits from classes of local schools on March 30 and 31, April 24, and May 18.

P. Connor, Local Forecaster, Kansas City, Mo., reports a lecture on "Weather and Advertising" before the Men's Club on January 28; also a lecture on February 9 on "Sixteen months of life on the islands off the coast of Washington and the work of the Weather Bureau."

F. E. Hartwell, Assistant Observer, Key West, Fla., reports a series of short talks before the public schools every Friday, beginning February 21, concerning the atmosphere, storms, weather bulletins, etc.

J. F. Voorhees, Observer, Knoxville, Tenn., reports seven lectures on elementary meteorology, instruments, and forecasting before 65 students in the tenth grade of the Knoxville High School October 3, 4, 7, 8, 9, 10, and 11, 1907; on October 10, 1907, a talk before the Farragut School, Concord, Tenn.; on November 5 and 12, 1907, the first two lectures of a series at the Knox County Central High School, Fountain City, Tenn. Lectures to students of the University of Tennessee January 10, 15, and 17, 1908; a lecture at Lincoln Memorial University, Cumberland Gap, on February 25; before the Knox County Truck Growers' Association, March 7; two half-hour talks before the night school for working men; two half-hour talks before the Hampton-Sidney School; three one-hour talks before the Park City High School. Forty copies of "Notes on Frost" were distributed and many fruit and truck growers persuaded to make preparation for protecting their crops from frost; all who tried the experiment were pleased with the results. "My observations this spring in orchards of apple, peach, plum, and cherry trees seem to indicate that the ability of a tree to resist frost varies greatly with its stage of development, and that varieties that at a certain stage would be injured will at a later stage stand a much lower temperature without injury. The subject is worthy of investigation, as definite knowledge along this line would be very valuable."

G. Harold Noyes, Local Forecaster, Lexington, Ky., reports that during May and November, 1907, and January, 1908, short series of talks were given to students in the agricultural department of the Kentucky State University.

H. F. Alciatore, Section Director, Little Rock, Ark., reports illustrated lectures on the work of the Weather Bureau January 7 and 8 before the University of Arkansas at Fayetteville and before the high school at Fort Smith; a lecture on "Synoptic Forecasting" on March 20, before the Arkansas Polytechnic Society; on March 26, a lecture before the Women's Cooperative Association; March 27, a lecture before the Central Young Men's Christian Association; December 5, an address before the Arkansas River Convention on "The regimen of the Arkansas River." Classes and teachers from local schools visited the office on December 29 and 30.

A. B. Wollaber, Local Forecaster, Los Angeles, Cal., reports visits by classes of local schools during March, May 12 and 16, and October 21.

H. R. Patrick, Observer, Marquette, Mich., reports that he delivered an address on March 10 before the Northern State Normal School, and that on March 26 the same class visited the local office.

Albert Ashenberger, Local Forecaster, Mobile, Ala., reports that the class in physical geography of Barton Academy visited the office on January 14, November 19, and December 9.

F. P. Chaffee, Section Director, Montgomery, Ala., reports that classes from local schools visited the office March 27 and April 3. He delivered a lecture before the Alabama Polytechnic Institute, Auburn, Ala., on March 30.

H. W. Grasse, Observer, Moorhead, Minn., reports that a class from Fargo College, Fargo, N. Dak., visited the office May 1.

Charles A. Hyle, Observer, Minneapolis, Minn., reported an address on October 14, 1907, before the Medical Department of Hamline University; repeated and extended, by request, on October 21.

William A. Shaw, Local Forecaster, Northfield, Vt., reports a series of 24 lectures before the senior class of Norwich University completed May 13, 1908. This course is two hours weekly during the winter term, and is obligatory for graduation. Mr. Shaw has given this course for the past twelve years without compensation, and ranks as a member of the faculty with the title of professor of meteorology.

Dewey A. Seeley, Observer, Peoria, Ill., reports that during the college year closing June 13 he gave lectures before the classes of the Bradley Polytechnic Institute on November 15, 1907, and June 9, 10, and 11, 1908. Classes visited the local office on April 15 and June 12.

T. F. Townsend, Section Director, Philadelphia, Pa., reports that G. S. Bliss, Observer, addrest classes of the Northeast Manual Training School on January 20 and 30; also the Science Club at George School on February 17.

E. A. Beals, District Forecaster, Portland, Oreg., reports that classes from local schools visited the office on March 12 and 25 when the work of the Bureau was explained by E. B. Gittings, jr.

M. E. Blystone, Local Forecaster, Providence, R. I., reports lectures before the local Men's Club on October 15 and 19.

L. H. Daingerfield, Local Forecaster, Pueblo, Colo., reports that classes from local schools visited the office on January 14 and 17, March 6, and April 15. An illustrated lecture was delivered before the Sociological Department of the Colorado Fuel and Iron Company on April 21; another lecture was given April 30 before the Crews-Beggs Commercial Club; and on May 8 before the Columbian School.

A. H. Thiessen, Section Director, Raleigh, N. C., reports that on May 8 he completed the usual course in meteorology and climatology given to the senior class of the State College of Agriculture and Mechanics, one hour weekly for three months.

R. J. Hyatt, Section Director, Salt Lake City, Utah, reports visits from local schools January 25, 26, and April 7.

Maurice Connel, Observer, San José, Cal., reports two lectures before the Chatauqua Assembly July 17 and 18, and a lecture before the San José Normal School March 23.

Wm. M. Dudley, Local Forecaster, Scranton, Pa., reports a visit from a local school January 15; an address January 28 during the "noon hour" to the employees of the Delaware, Lackawana, and Western Railroad under the auspices of the local branch of the Railroad Young Men's Christian Association. "At the request of the foreman I had a frame and daily weather map sent to the shop, but a few days later he wrote me as follows: 'I have posted the weather maps sent me from your office, and find that it takes too much of the men's time

to study them during working hours, so I herewith return to your office by messenger the frame you so kindly sent me and hope you will discontinue sending the maps.'"

G. N. Salisbury, Section Director, Seattle, Wash., reports he completed the course of fourteen lectures before the State University Summer School on August 2; conducted a class in practical meteorology at the State University, giving twenty lessons, lectures, quiz, and laboratory work between October 9, 1907, and January 24, 1908; a lecture before the Young People's Science Meeting February 6, 1908; visits from local classes February 8, 1908.

Charles Stewart, Local Forecaster, Spokane, Wash., reports a visit from local classes May 13.

Wm. G. Burns, Section Director, Springfield, Ill., reports an address at Whitehall, Ill., before the Teachers' Institute, July 26, 1907; at Lincoln, Ill., February 27, 1908, and Springfield, Ill., March 3, 1908.

N. R. Taylor, Local Forecaster, Springfield, Mo., reports visits from local classes January 28 and 29; February 20, 21, and 22.

R. H. Sullivan, Local Forecaster, Wichita, Kans., reports an address before the Sedgwick County Horticultural Society March 5, and before the Plymouth Brotherhood on May 11, which was repeated May 20.

Charles A. Hyle, Observer, Yellowstone Park, Wyo., reports a visit on August 15 by the summer class of the Montana School of Mines, Butte, Mont.

THE DIURNAL VARIATION OF THE RAINFALL AT KINGSTON, JAMAICA.

By MAXWELL HALL, Government Meteorologist, Chapelton, Jamaica.

[Reprinted from Jamaica Weather Report, October, 1908.]

The United States meteorological station in Kingston is provided with a self-registering rain-gage which measures the amount of rain fallen at intervals of time, so that the diurnal variation will be very accurately known in the course of a few years.

But the diurnal variation is now required for certain physical problems, it occurred to me that by reducing the notes made by Mr. Robert Johnston, in the large Kingston registers between 1881 and 1896, inclusive, a close approximation would be obtained.

The registers give the amount of rain fallen during any day, and the notes give the time at which the rain fell, or its duration if prolonged; and their reduction was made under my supervision by Mr. L. Maxwell Hall.

The mode of reduction was to ascertain the total amount of rain recorded for each hour for each month; and then various groups were formed to show that the characteristics were consistent thruout the whole series, and not dependent on seasons, or any particular year or years.

The following table gives the amount of rainfall for the sixteen years for each hour for spring and summer, or from March to August, inclusive; for autumn and winter, or from September to February, inclusive; and for the whole year. The last column gives the percentage for each hour for the whole series.

From this table we see that the rainfall is least at midnight, that it increases more or less regularly to 3 and 4 p. m., that there is a very small maximum at 2 and 3 a. m.; another small maximum at 7 and 8 a. m. and then the large maximum at 3 and 4 p. m.; after which it decreases more or less regularly to the minimum at midnight.

Table showing the diurnal variation of the rainfall at Kingston, Jamaica.

Hour.	Spring and summer.	Autumn and winter.	Whole year.	
	Inches.	*Inches.*	*Inches.*	*%*
1 a. m	6.85	4.85	11.70	2.3
2 a. m	10.63	8.05	18.68	3.6
3 a. m	9.32	8.62	17.94	3.5
4 a. m	8.74	8.22	16.96	3.3
5 a. m	8.94	7.65	16.59	3.3
6 a. m	10.53	8.00	18.53	3.6
7 a. m	12.53	11.27	23.80	4.7
8 a. m	12.92	11.03	23.95	4.7
9 a. m	10.89	10.54	21.43	4.2
10 a. m	10.09	8.63	18.72	3.6
11 a. m	9.95	7.31	17.26	3.2
Noon	11.61	11.30	22.91	4.5
1 p. m	16.09	13.68	29.77	5.8
2 p. m	18.55	16.52	35.07	6.8
3 p. m	24.57	18.63	43.20	8.5
4 p. m	26.60	17.20	43.80	8.6
5 p. m	18.83	12.50	31.33	6.1
6 p. m	13.12	10.49	23.61	4.6
7 p. m	11.05	7.95	19.00	3.7
8 p. m	8.28	6.33	14.61	2.8
9 p. m	6.41	5.38	11.79	2.3
10 p. m	6.04	4.42	10.46	2.1
11 p. m	5.55	6.19	11.74	2.3
Midnight	5.64	3.82	9.46	1.9
Sums	283.73	228.58	512.31	100.0

These characteristics permeate the whole series; month after month, year after year, the same features are more or less strongly marked; and they are also reproduced by the self-registering rain-gage for the spring and summer of the present year (1908).

It is therefore quite clear that we are dealing with important physical phenomena, tho their explanation may be hard to find.

THE TEACHER AND THE STUDENT.

The good work that is done in meteorology is often accomplished by young students working under the experienced guidance of some university professor. The theses submitted by students for the attainment of the higher collegiate degrees are very apt to give summaries of our present knowledge from some new points of view and to suggest or even demonstrate some advance in knowledge.

It is thru his scholars, by giving them his best ideas and guiding them as they work, that a teacher may hope to accomplish for his special branch of science far more than he could do single-handed. The best teachers hold the future of science in their hands. Their own broad views and high aspirations must be imprest upon all with whom they come in contact, and especially must young students be inspired to enthusiasm and devotion. The teacher is not to dwell too deeply on his own trials, to lose patience, or to be discouraged by overwork, poor laboratories, meager libraries, and want of sympathy; he must overcome these by his own force of character. He is expected to be optimistic in the midst of discouragements. There are always obstacles in the way of success, he who yields and settles down to merely getting a living out of his professorship, represents the lowest grade of the university professor. He who lets every one know his higher aims and hopes, and keeps his students working up toward the researches that he would himself carry out if possible, will surely find enthusiastic helpers. The men who put their science first and their troubles and difficulties last, are those whom the world admires and loves to copy, and who inspire the world.—*C. A.*